

DYE to make a difference in diffusivity between the released DYE and $(DYE - Y)_n - Z$ in correspondence or counter correspondence to a photosensitive silver salt having an imagewise latent image; and n represents an integer of 1 or 2, with the proviso that when n is 2, the plurality of $(DYE - Y)$'s may be the same or different.

REMARKS

Claims 1 and 5-9 are all the claims pending in the application.

I. The Indefiniteness Rejection

Claims 1 and 5-9 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

A. The Examiner's Position

The Examiner raises the following points:

- a. The use of the word "type" in the claims is unclear,
- b. The amendment to claim 1 does not read properly,
- c. Claim 1, line 8, the phrase "the external shell" has no antecedent basis in the claims,
- d. Claim 1 lines 15-16 contain an improper Markush group. It should read "the group consisting of... (A), (B) and (C)...",
- e. Claim 5, there is no antecedent basis for "the silver halide phase,"
- f. Claim 5 also has na improper Markush group,
- g. The amendment to claim 9 is inconsistent with Applicants' remarks which state that this amendment recites that the cores are silver bromide. The amended portion of the claim deals with the "tabular silver halide grains" as a whole and not just the cores of these grains;

Essentially, the amendment appears to require that the grains consist of only silver bromide and this would be contradictory to the limitation that the emulsion comprises core/shell grains,

- h. Claim 9 also has an improper Markush group,
- i. Claim 9 first line after formula (I), "a dye group" is repeated,
- j. Claim 9 second line after formula (I), the word "temporarily" is indefinite, and
- k. Claim 9 fourth and sixth line after formula (I), "a" probable should not be underlined.

B. Applicants' Responses

Applicants' responses to the points raised by the Examiner are presented in the same order as presented by the Examiner:

- a. the word "type" has been deleted from the claims,
- b. claim 1 line 13 now recites "wherein the core of said core/shell grains are composed of silver bromide and are subjected to",
- c. claim 1, line 7 now recites "...core/shell [type] grains having a core and an external shell"; this amendment provides antecedent basis; a similar amendment has been made to line 12 of claim 9,
- d. "or" has been amended to --and--,
- e. line 3 of claim 5 now recites "... [the silver halide phase of] the external shell has an external phase which is [formed] chemically sensitized",
- f. "or" has been amended to --and--,
- g. lines 11-13 of claim 9 have now been clarified to recite "... silver halide grains having a core/shell structure with a core and an external shell, composed of silver bromide, and having an average grain diameter", and

- h. "or" has been amended to --and--,
- i. in the second to last line on page 4 of the Amendment filed August 14, 1996, the words "or dye" in the definition of formula (I) have been deleted,
- j. the term "temporarily" has been deleted,
- k. "a" in the 4th and 6th lines after formula (I) in claim 9 should be underlined in the Amendment filed August 14, 1996, because "a" did not appear in original claim 9 -- Applicants therefore ask the Examiner for clarification.

In view of the above amendments, Applicants believe that their claims are now in compliance with the requirements of 35 U.S.C. §112 and therefore ask that the rejection under that provision be reconsidered and withdrawn.

II. The Prior Art Rejection

Claims 1 and 5-9 have been rejected under 35 U.S.C. § 103(a) as being obvious over Evans 4,504,570 in view of either Tanemura 5,081,009 or Shuto 5,110,719.

A. The Examiner's Position

Evans is cited for disclosing core/shell tabular grains which may be used in direct positive internal latent image systems. Emulsion B (column 69) contains grains which have a crystal morphology as presently claimed. The "a" and "b" values claimed in the present application are comparable to those values obtained from the emulsion of Evans.

However, the Examiner admits that Evans does not teach Applicants' sulfur sensitizers. According to the Examiner, both Tanemura and Shuto '719 disclose sulfur sensitizers that have structures according to Applicants' formula (A), (B) or (C).

The Examiner asserts that these sensitizers are disclosed to be useful for core/shell internal latent image silver halide grains, and to provide high sensitivity, low D_{min} and high D_{max} in silver halide emulsions (Tanemura column 2, line 62 to column 3, line 5 and the claims; Shuto '719 column 2 lines 5-9 and the claims).

The Examiner concludes that it would have been obvious to incorporate the sulfur sensitizers of either Tanemura or Shuto '719 in the grains of Evans, since the secondary references specifically teach the use of the sulfur sensitizers in the type of grains taught by Evans.

The Examiner has considered Applicants' arguments filed September 23, 1997, he is not persuaded. The Examiner states that the results from the two Declarations show an increase in maximum density, a decrease in minimum density and improved sensitivity when Applicants' sulfur sensitizers are used.

However, the Examiner believes that these results are the expected, when the sulfur compounds as taught by either Tanemura or Shuto '719 are used. The Examiner asserts that these secondary references teach an increase in maximum density, decrease in

minimum density and improved sensitivity when Applicants' sulfur compounds are use during sensitization.

B. Applicants' Response

Applicants respectfully traverse the rejection because the cited references would not have suggested the claimed invention or the superior photographic properties obtained with that invention to one skilled in the art.

In particular, Applicants have found that the chemical sensitization effects of their recited sulfur compounds and recited gold sensitizer are unexpectedly superior when applied to a silver bromide core grain of a core/shell tabular internal latent image direct positive grain, as opposed to when applied to a silver iodobromide core grain of a core/shell tabular internal latent image direct positive grain as disclosed in Evans (see the AgBrI grains in columns 69-70).

In support of their position, Applicants cite the experimental data presented in the attached unexecuted Declaration.^{1/} In the experiment described in that Declaration, Seed Crystal No. I1 (silver iodobromide) was prepared in the same manner as Emulsion A as disclosed in Evans and Seed Crystal No. I2 was prepared in the same manner as for Seed Crystal No. I1, except for changing the halogen composition to silver bromide.

^{1/} An executed version of the Declaration will be filed upon receipt.

The grain surface of each sample was subjected to chemical sensitization in the presence of both a gold sensitizer (potassium tetrachloroaurate) and a sulfur compound as shown in the following Table 1. The resulting grain was used as a core grain and covered with an external shell to form direct positive emulsions J1, J2, J3, J4, J5 and J6 containing a core/shell internal latent image type tabular grain having the characteristics which are shown in Table 1 on page 3 of the Declaration.

A photographic material sample (each of Sample Nos. 207 to 213 as shown in the following Table 2) was prepared in the same manner as Sample 101 in Example 1 in the specification of the present application, except for using each of the emulsions in the 8th layer, the 15th layer and the 22nd layer thereof (see Table 2 on page 4 of the Declaration). The sample was processed and evaluated in the same manner as in Example 1 to obtain the maximum density, minimum density, middle sensitivity, and negative sensitivity. The results thus obtained are shown in Table 3 on page 5 of the Declaration.

The results shown in Table 3 of the Declaration demonstrate that when comparing Sample 209 (according to the present invention) using the sulfur compound according to the present invention with Sample 210 (a comparative sample based upon Evans) using the sulfur compound according to the present invention, Sample 209 gave remarkable effects including of high Dmax, low Dmin, high middle sensitivity, and low negative sensitivity at high illumination

intensity, as compared with those values obtained with Sample 210.

On the other hand, when comparing Sample 207 (based upon Evans) using sodium thiosulfate pentahydrate as disclosed in Evans with Sample 213 (also based upon Evans) using sodium thiosulfate pentahydrate as disclosed in Evans, Sample 207 was not substantially different in Dmax, Dmin, middle sensitivity, and negative sensitivity at high illumination intensity values from those of Sample 213.

From the above data and discussion, the core/shell internal latent image type tabular direct positive emulsion prepared by using, as a core grain, a seed crystal chemically sensitized in the co-presence of the gold compound and the sulfur compound according to the present invention, when the halogen composition of the seed crystal (core grain) in silver bromide has unexpectedly superior effects compared to when the halogen composition of the seed crystal (core grain) is silver iodobromide.

As can be seen from the results as shown in the above Table 3 (see inventive Sample Nos. 211 and 212), the effects where Compound (2-3) or (3-5) as described in the specification of the present invention was used as the sulfur compound are the same unexpected effects as when Compound (1-16) was used as the sulfur compound. Further, the effects when Compound (1-17) or (1-21) as described in the specification of the present invention was used as the sulfur compound are the same unexpected effects as when Compound (1-16) was used as the sulfur compound.

Amendment under 37 C.F.R. §1.111
February 26, 1998
page 12

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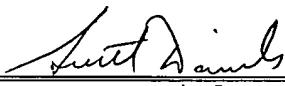
Accordingly, Applicants submit that their claimed invention would not have been obvious over the cited references and ask that the prior art rejection be reconsidered and withdrawn.

III. Conclusion

In view of the above, Applicants believe that their claimed invention is now in condition for allowance and therefore request favorable consideration.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



Scott M. Daniels
Registration No. 32,562

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

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